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(54) **Garment with hook-and loop fasteners.**

(57) In a garment 10, such as briefs or diapers for incontinent patients, which employ hook-and-loop fasteners, impairment of fastener operation by accumulation of lint on the hook-type fastener tab is avoided by storing the hook-type fastener tab 30, 32; 50 in a pocket 26, 28; 52 of the garment 10 when the garment 10 is being laundered. Preferably, the hook-type fastener tab 30, 32; 50 is secured in the pocket 26, 28; 52 by elastic material 34, 36 so that it can be extended, stretching the elastic material 34, 36, to fasten the hook-type fastener tab 30, 32; 50 to the corresponding female or loop-type fastener pad 14, 18; 16, 20; 54 and will automatically be retracted into the pocket 26, 28; 52 by the elastic material 34, 36, as soon as the hook-type fastener tab 30, 32; 50 is released. The pocket 26, 28; 52 may comprise PVC or other semi-rigid, pliable, smooth material, and may be fabricated together with the hook-type fastener tab 30, 32; 50 separately from the garment 10 and attached thereto as a "retrofit". Alternatively, the pocket 26, 28; 52 may be formed integrally with the garment 10.

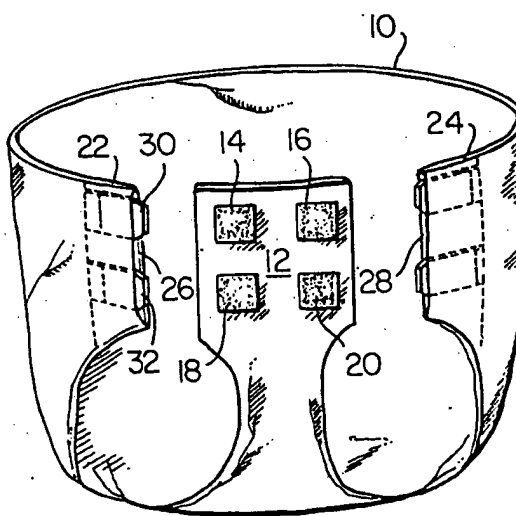


FIG. 1

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### **Technical Field:**

This invention relates to garments of the kind having so-called hook-and-loop type fasteners, and is especially applicable to garments in the form of briefs or diapers for incontinent patients, infants, and liners or covers for such garments.

### **Background Art:**

The invention is particularly concerned with problems arising from the use of the hook-and-loop type fasteners with such garments. Such fasteners, for example, are marketed under the trade mark VELCRO (registered trade mark) and usually comprise two pads, one on each of the two pieces of the garment to be fastened together. One pad, conveniently referred to as the "male", has a multiplicity of resilient hooks protruding from its surface. The other pad, conveniently referred to as the "female" has a pile formed by a plurality of loops or loop-like projections. When the male pad is pressed flat onto the female pad, the hooks engage in the loops. A drawback for such hook-and-loop fasteners is that the male fastener pad can collect lint during laundering of the garment, which reduces the efficiency of the fastener. This problem is significant when the garments need to be laundered frequently, as is the case with diapers and other incontinency garments. A further problem can arise during laundering in that the male fastener pad can snag other garments, perhaps causing damage.

In order to solve this problem, it has been proposed to seal or completely cover the male fastener pad during laundering, using an extra female fastener pad. Canadian Patent No. 1,212,204 to Frederica V. Coates discloses such a garment fastener arrangement in which two different embodiments are employed. On the one hand, the closure pad is provided on a flap which is hinged at one end to the male pad to be obscured, and closes onto it through a small angle. In the other embodiment, the extra female pad is provided on the same strip of material as the male pad to be obscured, which is folded back on itself to seal and prevent lint accumulation.

It is desirable for the sealing flap or pad to close automatically onto the male fastener pad, because it is likely to be forgotten when the garment is being prepared for laundering. It has been proposed, in the case of the hinged type of closure flap, to rely upon the stitching along the hinge axis, to bias the flap onto the male fastener pad. This is not entirely satisfactory, however, since such hook-and-loop type fasteners usually require positive pressure to close one against the other, and the mere biasing by means of stitching will not provide

such positive closure.

An object of the present invention is to provide a garment with hook-and-loop type fasteners which eliminates the deficiencies recounted in the foregoing discussion.

### **DISCLOSURE OF THE INVENTION**

According to the present invention, a garment having hook-and-loop type fastening means, has a loop-type fastener pad secured or associated with a first part of the garment, a pocket associated with a second part of the garment, a hook-type fastener tab housed in the pocket and extendable therefrom to overlie and engage the loop-type fastener pad, and means for retracting the hook-type fastener tab into the pocket.

The retracting means comprises a retracting device, preferably in the form of elastic ligament connecting the male fastener tab to the interior of the pocket. The lengths of the hook-type fastener tab, ligament, and pocket are preferably arranged so that an end portion of the hook-type fastener tab will protrude from the pocket when the hook-type fastener tab is in the retracted position and thus, serve as a pull-tab.

In preferred embodiments of the invention, the pocket is constructed integrally with the garment. It is envisaged, however, that the pocket could be fabricated separately, complete with elastic and fastener tabs, and attached to the garment after its manufacture.

Advantageously, the pocket comprises a sleeve of synthetic plastics material so that it will not snag the hooks of the hook-type fastener tab. Moreover, at least the mouth of the pocket may be lined with a material that is relatively smooth, so that the male fastener tab does not snag as it enters the pocket.

One form of the invention is where the garment comprises a diaper such as an adult diaper as will be illustrated hereinafter; the particular materials from which the components of the present invention can be made can vary and will be obvious to those skilled in the art after reading the present disclosure. Thus, the embodiment where a diaper is employed may utilize conventional diaper-forming materials; the pocket, which may be a synthetic plastic material as noted above, may likewise be made of other material such as fabric materials for different applications. Likewise, a hook and fastener may be made of materials such as those referred to above, e.g., "VELCRO".

Various advantages will be seen from the illustrated embodiments and as otherwise described herein.

### **BRIEF DESCRIPTION OF THE FIGURES OF THE**

## DRAWINGS

An embodiment of the invention will now be described by way of example only, and with reference to the accompanying drawings, wherein:

Figure 1 shows a diaper or brief for use in incontinency;

Figure 2a shows a quick release fastener portion of the diaper with the fastening tabs retracted;

Figure 2b corresponds to Figure 2a with the fastener tabs extended; and

Figure 3 is a partial view of a diaper modified to have a single fastener tab instead of two as shown in Figure 1.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to Figure 1, an adult brief 10, of generally hourglass shape when flat, is shown in the form it would assume, when worn, just prior to closing of its fasteners. The construction of brief 10 is as disclosed in Canadian Patent No. 1,205,251, and briefly, comprises an exterior, moisture-impermeable barrier layer and an inner, soft, liner layer. Between the outer barrier and the inner soft layer are provided one or more layers of highly absorbent material to absorb moisture passing into the garment through the liner layer. When the brief is being fitted, a frontal flap 12 is passed between the legs from front to rear and extends upwards onto the abdomen. The frontal flap 12 carries loop-type fastener pads 14, 16, 18 and 20, respectively. Tabs 14 and 18 are disposed one above the other adjacent one lateral edge, and tabs 16 and 20 are similarly disposed adjacent the other lateral edge of the flap. Flank or wing portions 22 and 24, respectively, of the brief 10 extend one around each side of the torso to meet the lateral edges of the frontal flap 12. In the flank portions 22 and 24, at the edge portion that is juxtaposed to the frontal flap 12, are provided pockets 26 and 28, respectively. (See Figures 2a and 2b.) The pocket comprises a sleeve of vinyl or polyvinyl chloride (Figure 2a) which is fitted between the outer and inner layers of the brief. Although PVC is preferred, other semi-rigid, pliable, smooth materials could be used, the intention being to minimize the risk of snagging by a pair of hook-type fastener tabs 30 and 32, respectively, housed inside the pocket.

The hook-type fastener tabs 30 and 32 are connected by elastic ligaments 34 and 36, respectively, to the interior of the pocket 26. The elastic ligaments 34 and 36 are conveniently stitched at one end to the respective hook-type fastener tab and at the other end of the pocket. If the tabs and pocket sleeve are installed as the garment is being made, the stitching of the interior end of the pocket,

which secures the interior ends of the elastic ligaments 34 and 36, can be done at the same time that the pocket is secured in the garment. As shown in Figures 1 and 2a, the hook-type fastener tabs 30 and 32 are positioned, when in the retracted position, so that their end portions 38 and 40, respectively, protrude beyond the mouth of the pocket 26. Hence, the end portions 38 and 40 can be grasped to withdraw the fastener tabs 30 and 32 from the pocket, and secure them onto the corresponding female or loop-type fastener pads 14 and 18, respectively. It should be noted that the male or hook-fasteners are provided on the reverse surface of the fastener tabs 30 and 32 in Figure 2a. When the fastener tabs 30 and 32 are released from the female pads 14 and 18, they will automatically be withdrawn or retracted into the pocket 26 by means of the elastic ligaments 34 and 36, respectively. Hence, there will be no danger of their accumulating lint during laundering of the brief 10.

The pocket 28 has a corresponding pair of fastener tabs to cooperate in a similar manner with the female fastener pads 16 and 20, respectively.

The mouths of the pockets 26 and 28 have linings which are of a smooth material to facilitate retraction and extraction of the hook-type fastener tab without snagging on the edge of the pocket.

Figure 3 shows a modification in which a single fastener tab 50 housed in a pocket 52 cooperates with a single female fastener pad 54 on the frontal flap 12. Otherwise, the construction is similar to that illustrated in Figure 1.

It will be appreciated that automatic retraction of the hook-type fastener tab to a storage position inside the pocket 26 is advantageous in preventing accumulation of lint on the hooks. A further advantage, however, derives from the use of elastic to return the fastening tab, since elastication enhances the comfort and fit of the brief, as compared to garments in which the fastenings, once made, are fixed or static. The use of elastic also allows the garment to conform to body shape and movement more readily than a fastener arrangement that does not incorporate elasticity. Moreover, the avoidance of extra flaps or tabs which are redundant when the brief or diaper is being worn, leads to a neater appearance. Additionally, the elasticated tabs are easy to use, inconspicuous and durable.

As mentioned previously, the pocket may be provided integrally during manufacture of the garment, with the benefit that it appears and feels like an integral part of the whole garment. On the other hand, however, the pocket with fastening tabs within it could be made as a separate unit, with an outer fabric cover, and attached to the brief. This would allow for easy repair, replacement or retrofit-

ting of existing garments.

## Claims

1. An article of clothing (10) adapted to be worn about the lower torso and having a fastening of the hook-and-loop type, characterized in that said fastening comprises a loop-type fastener pad (54) secured to a first part (12) of said article of clothing (10) and a pocket (52) at a second part of said article (10), a hook-type fastener tab (50) being housed in said pocket (52) and extendable therefrom so as to overlie and engage said loop-type fastener pad (54) when said first part (12) and said second part are juxtaposed, and elastic means for maintaining said hook-type fastener tab (50) into said pocket (52). 5
2. An article of clothing as defined in claim 1, characterized in that said first portion (12) and said second portion each have side edges, said side edges of said first portion (12) being in adjacent non-overlapping juxtaposition relative to said side edges (22, 24) of said second portion when said hook-type fastener tab (50) overlies and engages said loop-type fastener pad (54). 10
3. An article as defined in claim 1, said article comprising a diaper (10) having a main portion for extending around the rear of the lower torso of a person, and having opposed side edges (22, 24); a frontal flap (12) for extending between the legs of the person and up between said opposed side edges (22, 24), said flap (12) having side edges for positioning adjacent said opposed side edges (22, 24) of said main portion to form pairs of adjacent side edges; hook-and-loop fastening means on each of said pairs of adjacent side edges, said fastening means comprising a loop-type fastener pad (14, 18; 16, 20) on one side edge of each of said pairs of adjacent side edges, a pocket (26, 28) on the other side edge of each of said pairs of adjacent side edges, a hook-type fastener tab (30, 32) housed therein and extendable therefrom so as to overlie and engage said loop-type fastener pad (14, 18; 16, 20) on said one side edge of each of said pairs of adjacent side edges, when said main portion and said frontal flap (12) are juxtaposed, elastic means (34, 36) for maintaining said hook-type fastener tab (30, 32) into said pocket (26, 28) to prevent lint accumulation thereon during laundering, and characterized in that said hook-type fastener tab (30, 32) is extendable from said pocket (26, 28) to engage said loop-type fastener pad (14, 18; 16, 20) upon pulling said hook-type fastener tab (30, 32) from said pocket (26, 28), said pocket (26, 28) having non-snaggable material on interior surfaces thereof opposed to said hook-type fastener tab (30, 32) to prevent catching of said hook-type fastener tab (30, 32) in said pocket (26, 28). 15
4. A diaper as defined in claim 3, characterized in that said loop-type fastener pad (14, 18; 16, 20) is on said frontal flap (12), and said pocket (26, 28) is on said main portion. 20
5. A diaper as defined in claim 4, characterized in that said side edges (22, 24) of said main portion are in adjacent non-overlapping juxtaposition to said side edges of said frontal portion (12), when said hook-type fastener tab (30, 32) overlies and engages said loop-type fastener pad (14, 18; 16, 20). 25
6. A diaper as defined in claim 3, characterized in that said elastic means (34, 36) comprises an elastic ligament connecting said hook-type fastener tab (30, 32) to said interior of said pocket (26, 28). 30
7. A diaper as defined in claim 3, characterized in that said hook-type fastener tab (30, 32) has an end portion (38, 40) which can be grasped to withdraw said hook-type fastener tab (30, 32) from said pocket (26, 28) when said hook-type fastener tab (30, 32) is in a retracted condition. 35
8. A diaper as defined in claim 3, characterized in that said pocket (26, 28) is integral with said diaper (10). 40
9. A diaper as defined in claim 3, characterized in that said pocket (26, 28) and said hook-type fastener tab (30, 32) comprise a unit fabricated separately from said diaper (10). 45
10. A diaper as defined in claim 3, characterized in that said pocket (26, 28) includes a sleeve of synthetic plastics material. 50

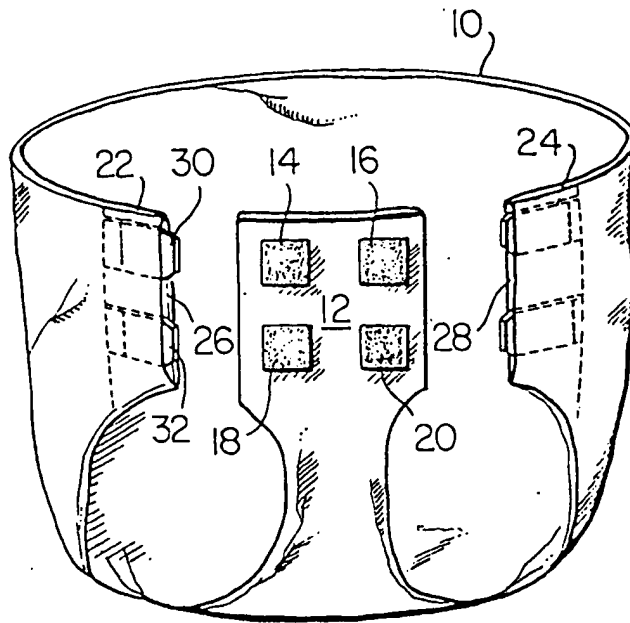


FIG. 1

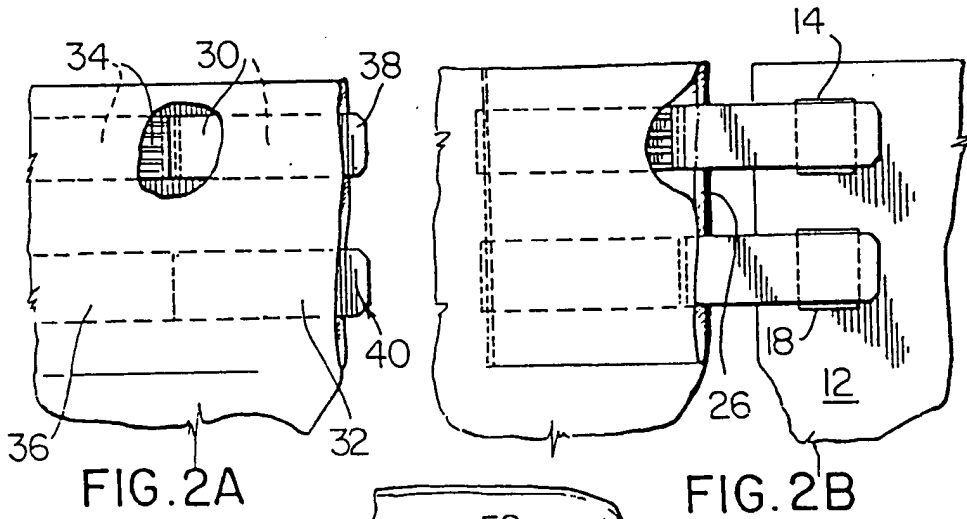


FIG. 2A

FIG. 2B

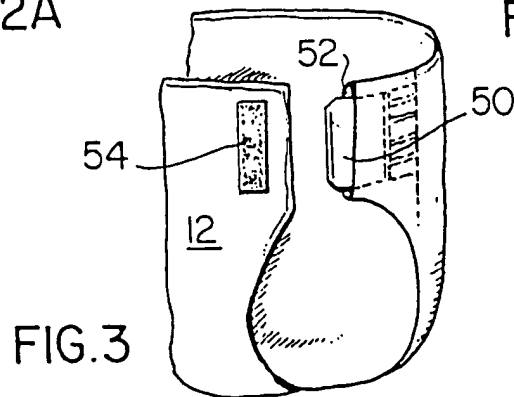


FIG. 3



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## EUROPEAN SEARCH REPORT

Application Number

EP 90 81 0483

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	EP-A-0131490 (PETIT S.A.R.L.) * the whole document * -----	1, 3, 6-10	A61F13/62 A44B18/00
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A61F A44B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18 FEBRUARY 1991	Examiner GARNIER F.M.A.C.
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document			